

Economic Impacts

In addition to quantifying angler expenditures within each coastal state and the U.S. as a whole, the second exercise carried out for this study was a regional input-output assessment that examined how those expenditures circulated through each state's economy as well as the economy of the entire U.S. The economic contribution or impact of saltwater sportfishing extends well beyond simply measuring angler expenditures. Angler expenditures provide considerable income and employment in a wide range of manufacturing, transportation, and service sectors. The effects of these expenditures can be classified as: (1) direct, (2) indirect, or (3) induced. Direct effects occur when anglers spend money at retail and service oriented fishing businesses. Indirect effects occur when retail and service sectors purchase fishing supplies from wholesale trade businesses and manufacturers, and pay operating expenditures. These secondary industries, in turn, purchase additional supplies and this cycle of industry to industry purchasing continues until all indirect effects are derived from outside the region of interest (Steinback, Gentner, and Castle 2004). Payments for goods and services produced outside of the study area (i.e., outside state lines) are excluded because these effects impact businesses located in other regions. Induced effects occur when employees in the direct and indirect sectors make purchases from retailers and service establishments in the normal course of household consumption. The summation of the direct, indirect, and induced multiplier effects represent the total economic contributions or impacts generated from saltwater sportfishing expenditures to the overall regional economy. In this study, we provide total impact estimates for sales, value-added, income, employment, and taxes for each coastal state in the U.S. including aggregate estimates for the entire U.S.

Input-output modeling is an approach used to describe the structure and interactions of businesses in a regional economy. Input-output models are capable of tracking quantities and purchasing locations of expenditures by anglers, support businesses, and employees in both direct and indirectly affected industries. For a comprehensive description of the strengths and weaknesses of the input-output modeling technique see Miller and Blair (1985).

In the analyses presented here, a ready-made regional input-output system called IMPLAN Pro (Minnesota IMPLAN Group, Inc. 1997) was employed to estimate the economic contribution of marine recreational fishing to each coastal state in the US. The IMPLAN Pro system is a widely used, nationally recognized tool, providing detailed purchasing information for 509 industrial sectors.

State-level multiplier effects attributed to anglers' expenditures were estimated by multiplying the total value of each of the individual expense items (see Table 4 for list of items) that is spent within a particular state by the corresponding IMPLAN-generated multiplier. The IMPLAN Pro multipliers measure the total state-level sales, income, value-added, and employment change in each economic sector caused by a \$1 change in output in any particular sector. Therefore, the product of the expenditure values that are spent within a particular state with their matching IMPLAN-generated multiplier provides an estimate of the contribution of each particular expenditure item to the state economy.

Angler expenditures were allocated to IMPLAN sectors based on the sectoring scheme shown in Table 4. Expenditure categories that included more than one IMPLAN sector were not aggregated to avoid the biases associated with aggregating. Instead, the expenditure in the category was distributed to individual IMPLAN sectors based on the proportion of final demand in each sector in each state. While the survey asked for total grocery expenditures, the typical grocery or convenience store purchase includes a wide range of products. To allocate generic grocery expenditures to more accurately reflect the mix of products purchased, the Personal Consumption Expenditure (PCE) activity data base for grocery store purchases contained in IMPLAN was used. PCE activity data bases are created by the Bureau of Economic Analysis and represent national average expenditure patterns.

In IMPLAN, margins are used to convert the retail-level prices paid by anglers into appropriate producer values. Margins ensure that correct values are assigned to products as they move from producers, to wholesalers, through the transportation sectors, and finally on to retail establishments. Regional purchase coefficients (RPCs) reflect the proportion of a retail item that is manufactured within the state or region. RPCs were applied to the retail expenditure estimates to insure that imported goods were not included in the impact estimates.

The resident status stratification is carried through to the impact analysis. Spending by residents on marine recreational fishing generally affects the amount of money available to be spent on other leisure-related activities within a state. A decrease in resident angler expenditures may shift disposable income to other leisure sectors resulting in little overall net change to sales, value-added, income, employment, and taxes within a state. However, even though the overall net change may approach zero, resident angling expenditures support jobs that might not otherwise exist. On the other hand, non-resident angling expenditures contribute to an overall net increase in economic impacts. To address these differences, separate input-output models were constructed for residents and non-residents. Multipliers in the non-resident model are estimated using the base state data in IMPLAN. To avoid double counting of resident expenditures, a separate model was constructed and the total value of resident expenditures was removed from the final demand in each state before the multipliers were generated.

State-level impacts were estimated for sales, value-added, income, employment, and taxes. Sales reflect total dollar sales generated from expenditures by anglers in each state. Value-added represents the contribution recreational angling makes to gross domestic product. Income represents wages, salaries, benefits, and proprietary income generated from angler expenditures. Employment includes both full-time and part-time workers and is expressed as total jobs. Finally, taxes denote the income received by federal and state/local governments.

This excerpt can be found on page 11 in [Gentner, Brad, and Scott Steinback. 2008. The Economic Contribution of Marine Angler Expenditures in the United States, 2006. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-F/SPO-94, 301 p.](#)